

What is claimed is:

1. A toner for developing a latent electrostatic image comprising:

a base of toner particle which comprises a binder resin and a coloring agent; and

an external additive,

wherein a plurality of the base of toner particle has a volume average particle diameter ( $D_v$ ) of  $3\mu\text{m}$  to  $7\mu\text{m}$ , a ratio ( $D_v/D_n$ ) of the volume average particle diameter ( $D_v$ ) to a number average particle diameter ( $D_n$ ) is 1.01 to 1.25, a plurality of the base of toner particle comprises 15% by number or less of the base of toner particle having a particle diameter of  $0.6\mu\text{m}$  to  $2.0\mu\text{m}$ , a plurality of the base of toner particle has a circularity of 0.930 to 0.990 on average, the binder resin comprises a modified polyester resin, and the toner comprises 0.3 parts by weight to 5.0 parts by weight of the external additive, relative to 100 parts by weight of the base of toner particle.

2. The toner for developing a latent electrostatic image according to Claim 1, wherein the toner has a formation coefficient (SF-1) of 105 to 140 in the following equation;

$$\text{SF-1} = \{(\text{MIXING})^2 / \text{AREA}\} \times (\pi/4) \times 100$$

where "MIXING" expresses an absolute maximum length of the toner, and "AREA" expresses a projected surface area of the toner.

3. The toner for developing a latent electrostatic image according to Claim 1, wherein the modified polyester resin has at least an urea group.

4. The toner for developing a latent electrostatic image according to Claim 1, wherein the external additive comprises hydrophobic silica.

5. The toner for developing a latent electrostatic image according to Claim 1, wherein the external additive comprises at least two types of inorganic fine particles.

6. The toner for developing a latent electrostatic image according to Claim 5, wherein each of the two types of inorganic fine particles is silica and titanium oxide.

7. The toner for developing a latent electrostatic image according to Claim 1, wherein the toner is obtained by at least one of dissolving and dispersing a toner composition in an organic solvent and further dissolving the toner composition in an aqueous medium, and the modified polyester resin is generated from a prepolymer in the aqueous medium.

8. The toner for developing a latent electrostatic image according to Claim 1, wherein the binder resin further comprises a

non-modified polyester resin and a weight ratio (the modified polyester resin/the non-modified polyester resin) of the modified polyester resin to the non-modified polyester resin is 5/95 to 80/20.

9. The toner for developing a latent electrostatic image according to Claim 8, wherein a peak molecular weight of the non-modified polyester resin is 1000 to 20000.

10. The toner for developing a latent electrostatic image according to Claim 8, wherein an acid value of the non-modified polyester resin is 10mgKOH to 30mgKOH.

11. The toner for developing a latent electrostatic image according to Claim 8, wherein glass transition temperature (T<sub>g</sub>) of the non-modified polyester resin is 35°C to 55°C.

12. The toner for developing a latent electrostatic image according to Claim 1, wherein the base of toner particle further comprises wax, the wax is dispersed in the base of toner particle, and more of the wax is present in a vicinity of a surface of the base of toner particle rather than a center of the base of toner particle.

13. The toner for developing a latent electrostatic image according to Claim 1, wherein the base of toner particle embeds a charge control substance on a surface thereof.

14. A container comprising:

a toner for developing a latent electrostatic image,

wherein the toner comprises:

a base of toner particle which comprises a binder resin and a coloring agent; and

an external additive,

wherein a plurality of the base of toner particle has a volume average particle diameter ( $D_v$ ) of  $3\mu\text{m}$  to  $7\mu\text{m}$ , a ratio ( $D_v/D_n$ ) of the volume average particle diameter ( $D_v$ ) to a number average particle diameter ( $D_n$ ) is 1.01 to 1.25, a plurality of the base of toner particle comprises 15% by number or less of the base of toner particle having a particle diameter of  $0.6\mu\text{m}$  to  $2.0\mu\text{m}$ , a plurality of the base of toner particle has a circularity of 0.930 to 0.990 on average, the binder resin comprises a modified polyester resin, and the toner comprises 0.3 parts by weight to 5.0 parts by weight of the external additive, relative to 100 parts by weight of the base of toner particle.

15. A developer comprising:

a toner for developing a latent electrostatic image,

wherein the toner comprises:

a base of toner particle which comprises a binder resin and a coloring agent; and

an external additive,

wherein a plurality of the base of toner particle has a volume average particle diameter ( $D_v$ ) of  $3\mu\text{m}$  to  $7\mu\text{m}$ , a ratio ( $D_v/D_n$ ) of the volume average particle diameter ( $D_v$ ) to a number average particle diameter ( $D_n$ ) is 1.01 to 1.25, a plurality of the base of toner particle comprises 15% by number or less of the base of toner particle having a particle diameter of  $0.6\mu\text{m}$  to  $2.0\mu\text{m}$ , a plurality of the base of toner particle has a circularity of 0.930 to 0.990 on average, the binder resin comprises a modified polyester resin, and the toner comprises 0.3 parts by weight to 5.0 parts by weight of the external additive, relative to 100 parts by weight of the base of toner particle.

16. The developer according to Claim 15, further comprising:  
a carrier.

17. A process for developing comprising the step of supplying a developer onto a latent electrostatic image, so as to visualize the latent electrostatic image,

wherein the developer comprises a toner for developing a latent electrostatic image, and the toner comprises:

a base of toner particle which comprises a binder resin and a coloring agent; and

an external additive,

wherein a plurality of the base of toner particle has a volume average particle diameter ( $D_v$ ) of  $3\mu\text{m}$  to  $7\mu\text{m}$ , a ratio ( $D_v/D_n$ ) of

the volume average particle diameter ( $D_v$ ) to a number average particle diameter ( $D_n$ ) is 1.01 to 1.25, a plurality of the base of toner particle comprises 15% by number or less of the base of toner particle having a particle diameter of  $0.6\mu\text{m}$  to  $2.0\mu\text{m}$ , a plurality of the base of toner particle has a circularity of 0.930 to 0.990 on average, the binder resin comprises a modified polyester resin, and the toner comprises 0.3 parts by weight to 5.0 parts by weight of the external additive, relative to 100 parts by weight of the base of toner particle.

18. The process for developing according to Claim 17, wherein the step is carried out by supplying the developer which comprises a carrier and the toner for developing a latent electrostatic image on a developer-bearing member so as to form magnetic brushes, by one of approaching and contacting the magnetic brushes which comprises the developer and is formed by a magnetic force of at least a main pole in the developer-bearing member, onto a latent electrostatic image,

the process for developing further comprises the step of disposing the toner in the developer onto the latent electrostatic image, so as to visualize the latent electrostatic image, and

an attenuation factor of magnetic flux density of the main pole is 40% or more.

19. The process for developing according to Claim 18, wherein

the main pole forms a half-value width of  $22^\circ$  or less.

20. The process for developing according to Claim 18, wherein the developer-bearing member further includes a pole for attracting the developer, a pole for transporting the developer, and a pole for assisting a formation of the main pole.

21. An image-forming process comprising the steps of:

charging a latent electrostatic image-bearing member imagewise;

irradiating light to the latent electrostatic image-bearing member, so as to form a latent electrostatic image;

supplying a developer onto the latent electrostatic image so as to visualize the latent electrostatic image and to form a toner image; and

transferring the toner image onto a recording medium, wherein the developer comprises a toner for developing a latent electrostatic image, and the toner comprises:

a base of toner particle which comprises a binder resin and a coloring agent; and

an external additive,

wherein a plurality of the base of toner particle has a volume average particle diameter ( $D_v$ ) of  $3\mu\text{m}$  to  $7\mu\text{m}$ , a ratio ( $D_v/D_n$ ) of the volume average particle diameter ( $D_v$ ) to a number average

particle diameter ( $D_n$ ) is 1.01 to 1.25, a plurality of the base of toner particle comprises 15% by number or less of the base of toner particle having a particle diameter of  $0.6\mu\text{m}$  to  $2.0\mu\text{m}$ , a plurality of the base of toner particle has a circularity of 0.930 to 0.990 on average, the binder resin comprises a modified polyester resin, and the toner comprises 0.3 parts by weight to 5.0 parts by weight of the external additive, relative to 100 parts by weight of the base of toner particle.

22. The image-forming process according to Claim 21, wherein the step of supplying the developer is carried out by supplying the developer which comprises a carrier and the toner for developing a latent electrostatic image on a developer-bearing member by one of approaching and contacting magnetic brushes which comprises the developer and are formed by a magnetic force of at least a main pole in the developer-bearing member, onto a latent electrostatic image, and by disposing the toner in the developer onto the latent electrostatic image, so as to visualize the latent electrostatic image, and  
an attenuation factor of magnetic flux density of the main pole is 40% or more.

23. An image-forming apparatus comprising:  
a latent electrostatic image-bearing member;  
a charger configured to charge the latent



electrostatic image-bearing member so as to form a latent electrostatic image;

a light-irradiator configured to irradiate a light to the latent electrostatic image;

an image-developer configured to supply a developer onto the latent electrostatic image, so as to form a toner image; and

a transfer configured to transfer the toner image onto a recording medium,

wherein the developer comprises a toner for developing a latent electrostatic image, and the toner comprises:

a base of toner particle which comprises a binder resin and a coloring agent; and

an external additive,

wherein a plurality of the base of toner particle has a volume average particle diameter ( $D_v$ ) of  $3\mu\text{m}$  to  $7\mu\text{m}$ , a ratio ( $D_v/D_n$ ) of the volume average particle diameter ( $D_v$ ) to a number average particle diameter ( $D_n$ ) is 1.01 to 1.25, a plurality of the base of toner particle comprises 15% by number or less of the base of toner particle having a particle diameter of  $0.6\mu\text{m}$  to  $2.0\mu\text{m}$ , a plurality of the base of toner particle has a circularity of 0.930 to 0.990 on average, the binder resin comprises a modified polyester resin, and the toner comprises 0.3 parts by weight to 5.0 parts by weight of the external additive, relative to 100 parts by weight of the base of toner particle.

24. The image-forming apparatus according to Claim 23, wherein the image-developer comprises a developer bearing member which faces the latent electrostatic image bearing member, the developer bearing member has at least a main pole, and a attenuation factor of magnetic flux density of the main pole is 40% or more.

25. An image-forming process cartridge comprising:

- a developer;

- an image-developer configured to have a developer container, and to supply the developer onto a latent electrostatic image, so as to visualize the latent electrostatic image and to form a toner image; and

- one of:

  - a latent electrostatic image support;

  - a charger configured to charge a surface of the latent electrostatic image uniformly; and

  - a cleaner configured to clean the surface of the latent electrostatic image support,

wherein the image-forming process cartridge is formed in one-piece construction, and is attachable to and detachable from an image-forming apparatus, the developer comprises a toner for developing a latent electrostatic image, and the toner comprises:

- a base of toner particle which comprises a binder resin and a coloring agent; and

an external additive,

wherein a plurality of the base of toner particle has a volume average particle diameter ( $D_v$ ) of  $3\mu\text{m}$  to  $7\mu\text{m}$ , a ratio ( $D_v/D_n$ ) of the volume average particle diameter ( $D_v$ ) to a number average particle diameter ( $D_n$ ) is 1.01 to 1.25, a plurality of the base of toner particle comprises 15% by number or less of the base of toner particle having a particle diameter of  $0.6\mu\text{m}$  to  $2.0\mu\text{m}$ , a plurality of the base of toner particle has a circularity of 0.930 to 0.990 on average, the binder resin comprises a modified polyester resin, and the toner comprises 0.3 parts by weight to 5.0 parts by weight of the external additive, relative to 100 parts by weight of the base of toner particle.

26. The image-forming process cartridge according to Claim 25, wherein the image-developer comprises a developer bearing member which faces the latent electrostatic image bearing member, the developer bearing member has at least a main pole, and an attenuation factor of magnetic flux density of the main pole is 40% or more.